

ABSTRACT

Photo-thermo-refractive (PTR) glass is a multi-component silicate glass having photosensitivity in near UV region. A novel process is disclosed for PTR glass sensitization to visible region by means of two-step illumination followed by thermal development. This disclosed process utilizes a first illumination at approximately 325 nm followed by a second illumination with radiation in the visible spectral region out of the region of original photosensitivity of the PTR glass which enables fabrication of complex holographic optical elements for visible region such as plane elements, lenses, curved mirrors, combinations of complex elements and optical correlators. The same process provides a positive increment of refractive index in the bulk of the PTR glass and, therefore, can be used for refractive optical elements recording, such as lenses and waveguides.